BLACK & VEATCH
SPECIAL PROJECTS CORP.

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USEPA/ARCS V
American Chemical Services 80-5PJ7

BVSPC Project 71670
BVSPC File C.3
June 3, 1996

Ms. Sheri Bianchin
U.S. Environmental Protection Agency
77 West Jackson Boulevard (SRW-6J)
Chicago, Illinois 60604

Subject: Comments on Montgomery Watson's Lower Aquifer Technical Memorandum for American Chemical Services

Dear Ms. Bianchin:

Enclosed are review comments on Montgomery Watson's Lower Aquifer Technical Memorandum for American Chemical Services. The comments are generally organized to follow Montgomery Watson's response to USEPA comments and the revised Lower Aquifer Technical Memorandum.

We appreciate the opportunity to assist USEPA on this project. Please contact our office if you have any questions.

Sincerely,

BLACK & VEATCH SPECIAL PROJECTS CORP.

Matt Mastronardi
for
Steven R. Mrkvicka

Enclosure
cc: D. Gountanis, USEPA (MCC-10J)
M. Hendrixson, USEPA (MCC-10J)
C. Norman, USEPA (SMC-5J)
R. McAvoy, w/enclosure
R. Lantz, w/enclosure
M. Mastronardi, w/enclosure

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Review Comments on Montgomery Watson's Lower Aquifer Investigation Technical Memorandum - May 1996 American Chemical Services, Inc.

General Comments

Comment No. 1,

Based on a review of historic and current data, the following lower aquifer wells exceed the final remediation levels presented in Appendix B of the SOW: ATMW-4D, MW9, MW-10C, MW10, MW29, MW30, MW31, MW32, MW33, MW34 and MW35 (Table 1). This data indicates that the extent of contamination has not been defined to the north of the site, throughout the depth of the lower aquifer. In addition, data presented in the lower aquifer investigation technical memorandum indicates that bedrock wells IW1, IW2, and IW3 also exceed final remediation levels.

Comment No. 2,

The requirements of investigative activities presented in the SOW and SOPs for the abandoned production wells have not been completed. This work must be performed prior to consideration of acceptable abandonment procedures.

Comment No. 3,

According to vertical profiling data and PID readings (i.e., 67 and 125 ppm), the most contaminated zone at the MW-10 area was between 612 and 603 feet AMSL. However, no monitoring well was placed at the MW-10 area, screened in this interval, as specified in the LAI SOW and SOPs. It is recommended that a well be installed in this area screened between 613 and 603 feet AMSL.

Comment No. 4,

The data presented in the LAI technical memorandum indicates that IW5 and IW6 are in direct communication with the lower aquifer. In light of the fact that IW5 and IW6 are both located within the waste area, these wells are and have been a significant contaminant pathway between the upper and lower aquifers. Recommend that water levels be sounded at IW1, IW2, IW3 and IW4.

Comment No. 5,

Recommend sampling the Keen Foundry wells identified as private wells 3 (PW06) and 4 (PW07) on Figure 2-28 of the August 1995 Pre-Design Work Plan. These wells appear to be the closest downgradient wells in the lower aquifer.

Specific Comments

Comment No. 1, Executive Summary, Page 1.

The text does not include one of the objectives of the investigation presented in the January 25, 1996 Lower Aquifer Investigation SOW and SOPs: "Determine if dense, non-aqueous liquids (DNAPLs) are present in the Lower Aquifer."

Comment No. 2, Executive Summary, 2nd Paragraph, 4th sentence,

The LAI included the installation of 9 lower aquifer monitoring wells, not 8: MW-28, 29, 30, 31, 32, 33, 34, 35, and 36.

Comment No. 3, 2.1.1, 1st sentence,

"to prevent interaction between the upper and lower aquifers" is awkward and not specific. Surface casing was set to prevent potential downward migration of upper aquifer contaminants to the confined lower aquifer.

Comment No. 4, 2.1.1, 2nd sentence,

Clarify which clay confining layer (the upper clay).

Comment No. 5, 2.1.2, 3rd paragraph (bulletted).

This is not correct. Keep in mind the order of drilling these well clusters: MW17 was the first area drilled, then MW8, MW10, MW9, M4, and finally MW7. The boring (core) for MW17 (PZ43) was extended into bedrock to both characterize saprolite (shale) and bedrock material as well as to determine lower clay thickness. To say "because potential VOC contamination was indicated during vertical profiling at the base of the aquifer at MW8, the remainder of the borings were completed to the top of the lower clay..." is worded incorrectly - one of the remaining borings was still extended into bedrock - even though the field crew knew of the 1,2-DCA hit at 99 feet bls for VP3 at the MW8 locale.

Comment No. 6, Section 2.1.3, 2nd Paragraph, 3rd Sentence,
Describe the method used to purge, amount of groundwater purged, and flow rate used to purge. Where was the Grundfos pump placed? (2 feet above screen). Provide an estimate of circulation water lost to the formation prior to sampling.

Comment No. 7, Section 2.2.1, 2nd Bullet,
Provide an elevation datum relative to feet above mean sea level (amsl).

Comment No. 8, Section 3.1.2, Upper Clay Confining Layer, Paragraph 1, Page 11
Incorporate boring CB-1 which had a clay thickness of 2.5 feet into the discussion of clay layer thickness near MW-10C.

Comment No. 9, Section 3.1.2, Upper Clay Confining Layer, Paragraph 2, Page 11
Revise the date provided in the text from "October 30, 1996" to "October 30, 1995."

Comment No. 10, Section 4.2, Laboratory Analytical Results, General
All detected compounds in groundwater samples should be compared to the chemicals and their associated remediation levels presented in Appendix B of the SOW.

Comment No. 11, Section 4.2
The Lower Aquifer Investigation SOPs and SOWs dated January 25, 1996 state that in the MW10 area, "A second boring will be drilled to place a 2-inch diameter stainless steel monitoring well at the depth determined by vertical profiling (to be) the highest concentration of contamination..." According to vertical profiling data and PID readings (i.e., 67 and 125 ppm), the most contaminated zone at the MW-10 area was between 612 and 603 feet AMSL. Explain why no monitoring well was placed at the MW-10 area, screened in this interval, as specified in the LAI SOW and SOPs. It is recommend that a well be installed in this area screened between 613 and 603 feet AMSL.

Comment 12, Section 5, General
To make our review of the impact the ACS production wells have on the lower aquifer we require the following additional data: pumping rates for each well, duration of pumping, frequency of pumping events.

Comment 13, Section 5.1, IW5, Page 19

The text states that water was measured at a depth of approximately 3.3 and 3.4 feet below ground surface at IW5 and IW6, respectively. Although the wells are screened in the lower aquifer, their water elevations are more consistent with readings taken from the upper aquifer system than the lower aquifer system. The October 2, 1995 upper aquifer and lower aquifer water levels at these locations were approximately 5.9 ft. and 17.2 ft. below grade, respectively. This data indicates that IW5 and IW6 are in direct communication with the lower aquifer. In light of the fact that these wells are located within the waste area, IW5 and IW6 are and have been significant contaminant pathways between the upper and lower aquifer. Water levels should be measured at IW1, IW2, IW3 and IW4.

Comment 15, Section 5.3, Time Series Sampling of IW-1, Page 20

Delete "Pumping rate estimated to increase from 25 gpm to 60 gpm at 1,100." and replace with "Pumping rate estimated to increase from 25 gpm to 60 gpm at 1100."

Comment 16, Section 7.2.1, Page 25

The text states that the contaminants have not migrated to the lower aquifer to the downgradient point of compliance. This is false. A review of current groundwater data indicates that groundwater in the wells exceed Appendix B, SOW remediation levels.

Comment 17, Appendix G

Discuss the results of MW34 MS and MSD which had significant SVOC contamination.

Comment 18, Appendix G

Define what the "P" data qualifier means and provide rationale why it was assigned to Aroclor-1260 of MW34 MS and MSD.

Comment No. 19, Appendix H

There are a number of detected compounds which have a line striking them out. The rationale for striking these compounds out is not provided. Therefore, provide a table that includes, for each monitoring well location, the rationale for striking out each of the following compounds:

MW28: SVOC-TIC at run time 10.090.

MW29: Methylene chloride,SVOC TICs at run times 8.440, 10.14, 11.45, 14.28 and 15.25.

MW30: SVOC TIC, butylated hydroxytoluene (27 μg/L).

MW31: VOA TIC at run time 23.89, Bis(2-ethylhexyl)phthalate (B2EP) and SVOC TICs at run times 6.92, 7.53, 8.44 and 10.14.

MW 32/32 dup: Methylene chloride, B2EP, and SVOC TICs at run times 6.92, 7.52, 8.44, 10.14, 11.60, 15.25 and 24.29.

MW33: VOA TICs at run times 9.82, 12.36, 12.76, 14.10, 16.11 and 24.67. SVOC TICs at run times 8.22, 8.44, 8,57, 8.61, 9.72, 9.79, 10.17, 12.32, 12.43, 12.99, 13.22, 14.27, 14.35, 14.39, 14.57, 14.63, 15.52, 18.22, 22.22 and 25.54.

MW34: B2EP and SVOC TICs at run times 6.92, 7.53, 8.44, 10.15, 15.25 and 24.29.

MW35: Acetone, methylene chloride and SVOC TICs at run times 7.30, 11.49, 15.08 and 16.65.

Comment 20, Appendix K,

Include a case narrative in this appendix, similar to that provided in Appendices H and I. Also, include information on the compounds used to spike MS and MSD samples, along with corresponding percent recoveries.

Comment No. 21, Figure 2.

Provide a third cross-section location line connecting monitoring wells MW22, M-1D, M-2D, M-3D, M-5D, MW21, MW23 and MW24.

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Table 1. Comparison Between 1996 Lower Aquifer Groundwater Analytical Results and Final Remediation Levels.

Postulated Location Within the Plume	General Location	Groundwater Sample	Organic Compounds					Inorganic Compounds			
			VOCs								
			Acetone (192-2,300 ug/L)	Methylene Chloride (5 ug/L)	VOC TICs	Bis(2-ethylhexyl)phthalate (5.8 ug/L)	SVOC TICs (cyclic ketones, 5.8 ug/L)	Arsenic (8.8 ug/L)	Manganese (275-3,300 ug/L)	Beryllium (0.02 ug/L)	Thallium (0.2-2.4 ug/L)
Background	MW17 Area	MW28	nd	nd	0	nd	0	nd	119	nd*	nd*
Side Gradient	MW7 Area	MW36	nd	nd	0	nd	2	nd	145	nd*	nd*
	MW8 Area	MW31	nd	nd	30	10	22	4.1	122	nd*	nd*
		MW32/MW32D	nd/nd	1/2	0/0	30/32	54/43	3.7/3.8	219/250	nd*	nd*
	MW9 Area	MW29	nd	2	5	27	61	nd	218	nd*	nd*
		MW34	nd	nd	0	8	48	nd	138	nd*	nd*
	M4 Area	MW35	2	6	0	20	36	nd	87.8	nd*	nd*
Down Gradient**	MW10 Area	MW30	nd	nd	27	68	164	3.6	223	nd*	nd*
		MW33	nd	nd	145	nd	516	4.5	686	nd*	3.8

The concentration exceeds the final remediation levels presented in the SOW, Appendix B. Final remediation levels are presented in parentheses following each compound. SVOC TIC's are presented for information purposes only.

* The detection limits used were not capable of determining whether the groundwater concentrations exceeded the final remediation levels presented in the SOW, Appendix B.

** Additional downgradient wells are ATMW-4D and MW-10C. However, these wells were not sampled during this investigation.

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		MW32/MW32D	nd/nd	1/2	0/0	30/32	54/43	3.7/3.8	219/250	nd*	nd*
	MW9 Area	MW29	nd	2	5	27	61	nd	218	nd*	nd*
		MW34	nd	nd	0	8	48	nd	138	nd*	nd*
	M4 Area	MW35	2	6	0	20	36	nd	87.8	nd*	nd*
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